

Refine Search

10/560,695

Search Results -

Term	Documents
@PD	7690685
(40 AND (@PD > "20061011")).USPT.	0
(L40 AND @PD > 20061011).USPT.	0

Database:

US Pre-Grant Publication Full-Text Database
 US Patents Full-Text Database
 US OCR Full-Text Database
 EPO Abstracts Database
 JPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Search:

L41

Refine Search

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Search History

DATE: Wednesday, October 11, 2006
 [Purge Queries](#)
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Set Name Query

side by side

Hit Count Set Name

result set

DB=USPT; PLUR=YES; OP=ADJ

<u>L41</u>	L40 and @pd > 20061011	0	<u>L41</u>
<u>L40</u>	L39 and L38	23	<u>L40</u>
<u>L39</u>	L36 and (position adj control\$4)	196	<u>L39</u>
<u>L38</u>	L36 and (position adj sensor)	61	<u>L38</u>
<u>L37</u>	L36 and (position near sensor)	65	<u>L37</u>
<u>L36</u>	L35 and L34	449	<u>L36</u>
<u>L35</u>	(subject or patient) and support\$4 and (position near control\$4)	16791	<u>L35</u>
<u>L34</u>	(Magnetic adj resonance) or mri or nmr	132752	<u>L34</u>
<u>L33</u>	20030000355	0	<u>L33</u>
<u>L32</u>	'5467002'.pn.	1	<u>L32</u>
<u>L31</u>	'5467002'.pn.	1	<u>L31</u>
<u>L30</u>	6045262	4	<u>L30</u>

<u>L29</u>	6023799	5	<u>L29</u>
<u>L28</u>	US-36495-E.did.	0	<u>L28</u>
<u>L27</u>	'4972852'.pn.	1	<u>L27</u>
<u>L26</u>	'4972852'.pn.	1	<u>L26</u>
<u>L25</u>	'5065760'.pn.	1	<u>L25</u>
<u>L24</u>	'5144244'.pn.	1	<u>L24</u>
<u>L23</u>	'5457387'.pn.	1	<u>L23</u>
<u>L22</u>	US-36495-E.did.	0	<u>L22</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>			
<u>L21</u>	5551430	13	<u>L21</u>
<i>DB=USPT; PLUR=YES; OP=ADJ</i>			
<u>L20</u>	L19 and L18	23	<u>L20</u>
<u>L19</u>	L16 and (position adj control\$4)	196	<u>L19</u>
<u>L18</u>	L16 and (position adj sensor)	61	<u>L18</u>
<u>L17</u>	L16 and (position near sensor)	65	<u>L17</u>
<u>L16</u>	L15 and L14	449	<u>L16</u>
<u>L15</u>	(subject or patient) and support\$4 and (position near control\$4)	16791	<u>L15</u>
<u>L14</u>	(Magnetic adj resonance) or mri or nmr	132752	<u>L14</u>
<u>L13</u>	20030000355	0	<u>L13</u>
<u>L12</u>	'5467002'.pn.	1	<u>L12</u>
<u>L11</u>	'5467002'.pn.	1	<u>L11</u>
<u>L10</u>	6045262	4	<u>L10</u>
<u>L9</u>	6023799	5	<u>L9</u>
<u>L8</u>	US-36495-E.did.	0	<u>L8</u>
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<u>L6</u>	'4972852'.pn.	1	<u>L6</u>
<u>L5</u>	'5065760'.pn.	1	<u>L5</u>
<u>L4</u>	'5144244'.pn.	1	<u>L4</u>
<u>L3</u>	'5457387'.pn.	1	<u>L3</u>
<u>L2</u>	US-36495-E.did.	0	<u>L2</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>			
<u>L1</u>	5551430	13	<u>L1</u>

END OF SEARCH HISTORY

Hit List

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Search Results - Record(s) 1 through 4 of 4 returned.

☐ 1. Document ID: US 6045262 A Relevance Rank: 99

L10: Entry 4 of 4

File: USPT

Apr 4, 2000

US-PAT-NO: 6045262DOCUMENT-IDENTIFIER: US 6045262 A

TITLE: Apparatus and method for controlling table in medical diagnosis system

DATE-ISSUED: April 4, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Igeta; Yoshikazu	Matsudo			JP
Makino; Eiichi	Kashiwa			JP
Mochitate; Mikio	Noda			JP
Abe; Hiroshi	Kashiwa			JP
Yano; Takeshi	Kagoshima			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Hitachi Medical Corporation	Tokyo			JP	03

APPL-NO: 09/044226 [PALM]

DATE FILED: March 19, 1998

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	9-085774	March 19, 1997

INT-CL-ISSUED: [07] A61B 6/04

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	<u>A61 B 6/04</u>	20060101

US-CL-ISSUED: 378/209; 318/649

US-CL-CURRENT: 378/209; 318/649

FIELD-OF-CLASSIFICATION-SEARCH: 378/209, 378/205, 378/208, 378/114, 318/560, 318/566, 318/625, 318/626, 318/652, 318/265, 318/286, 318/467, 318/486, 318/649

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5467002</u>	November 1995	Brooks	318/553

ART-UNIT: 286

PRIMARY-EXAMINER: Porta; David P.

ASSISTANT-EXAMINER: Schwartz; Michael J.

ATTY-AGENT-FIRM: Antonelli, Terry, Stout & Kraus, LLP

ABSTRACT:

A control apparatus for controlling movement of a table supporting an object under inspection in a medical diagnosis system includes a driving power unit for moving the table, a position detector for outputting a signal indicating a position of the table, a positioning servo-control unit for controlling the driving power unit so that the detected position signal coincides with a given desired value, a manipulating force detector for outputting a force signal corresponding to a manipulating force applied by an operator, a force-to-position conversion unit for converting the force signal into a position change quantity for the table, a force control unit for controlling the driving power unit in accordance with the position change quantity so long as the manipulating force is being detected, and a change-over unit for selecting either the positioning servo-control unit or the force control unit in response to operation of the operator.

18 Claims, 20 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw D
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☐ 2. Document ID: US 6318508 B1 Relevance Rank: 99

L10: Entry 3 of 4

File: USPT

Nov 20, 2001

US-PAT-NO: 6318508

DOCUMENT-IDENTIFIER: US 6318508 B1

TITLE: Elevating system control method and apparatus synchronizing plural elevating devices

DATE-ISSUED: November 20, 2001

INVENTOR-INFORMATION:

PRIMARY-EXAMINER: Salata; Jonathan

ABSTRACT:

For each control period, a position of each elevator of a plurality of elevating devices is calculated, the farthest elevator from a designated movement destination position is determined as a reference elevator based on the position of each elevator thus calculated, position deviations of other elevators are calculated with respect to a position of the reference elevator, actuators of the elevators other than the reference elevator which have the position deviations outside a predetermined range are off controlled, and actuators of the elevator having the position deviation within the predetermined range and the reference elevator are on controlled.

9 Claims, 15 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw D
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☐ 3. Document ID: US 6341893 B1 Relevance Rank: 99

L10: Entry 2 of 4

File: USPT

Jan 29, 2002

US-PAT-NO: 6341893

DOCUMENT-IDENTIFIER: US 6341893 B1

**** See image for Certificate of Correction ****

TITLE: Photographing stand with a radiation image receiving portion

DATE-ISSUED: January 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Matsumoto; Kazuhiro	Utsunomiya			JP
Yamayoshi; Junichi	Urawa			JP
Tsujii; Osamu	Utsunomiya			JP
Sako; Tsukasa	Utsunomiya			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Canon Kabushiki Kaisha	Tokyo			JP	03

APPL-NO: 09/356699 [PALM]

DATE FILED: July 20, 1999

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	10-223636	July 23, 1998
JP	11-082498	March 25, 1999

Full	Title	Station	Print	Review	Classification	Date	Reference			Claims	AMC	Draw D.
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☐ 4. Document ID: US 7120223 B2 Relevance Rank: 99

L10: Entry 1 of 4

File: USPT

Oct 10, 2006

US-PAT-NO: 7120223

DOCUMENT-IDENTIFIER: US 7120223 B2

TITLE: Body-supporting couch

DATE-ISSUED: October 10, 2006

PRIOR-PUBLICATION:

DOC-ID	DATE
US 20040057557 A1	March 25, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nafstadius; Peder	Taby			SE

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Pencilbeam Technologies	Uppsala			SE	03

APPL-NO: 10/253695 [PALM]

DATE FILED: September 25, 2002

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	A61B6/04	20060101	A61B006/04

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	A61 B 6/04	20060101

US-CL-ISSUED: 378/20; 378/196, 378/209, 5/601

US-CL-CURRENT: 378/20; 378/196, 378/209, 5/601

FIELD-OF-CLASSIFICATION-SEARCH: 378/65, 378/195, 378/196, 378/208, 378/209, 378/20, 5/81.1R, 5/81.1C, 5/81.1HS, 5/601, 5/611, 5/86.1, 600/415, 600/425
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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Operably connected with the first and second coils, the interface subsystem includes (i) a power splitter for splitting radio frequency (RF) power for delivery to the first and second coils and (ii) a phase compensator for adjusting the phase relationship of the RF power delivered to the first and second coils so that a magnetic field produced thereby in the overlap region is approximately equal to that produced near the center of each of the first and second regions.

60 Claims, 7 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	KWD	Drawings
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☐ 13. Document ID: US 7053617 B2 Relevance Rank: 95

L1: Entry 1 of 13

File: USPT

May 30, 2006

US-PAT-NO: 7053617

DOCUMENT-IDENTIFIER: US 7053617 B2

TITLE: Integrated electronic RF shielding apparatus for an MRI magnet

DATE-ISSUED: May 30, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20050073308 A1

April 7, 2005

INVENTOR-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

Havens; Timothy John

Florence

SC

US

ASSIGNEE-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

TYPE CODE

General Electric Co.

Schnectady

NY

US

02

APPL-NO: 10/605475 [PALM]

DATE FILED: October 1, 2003

INT-CL-ISSUED:

TYPE IPC

DATE

IPC-OLD

IPCP G01V3/00

20060101

G01V003/00

INT-CL-CURRENT:

TYPE IPC

DATE

CIPP G01 V 3/00

20060101

US-CL-ISSUED: 324/318

US-CL-CURRENT: 324/318

FIELD-OF-CLASSIFICATION-SEARCH: 324/307, 324/309, 324/314, 324/318, 324/322

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Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 6023799 A Relevance Rank: 99

L9: Entry 5 of 5

File: USPT

Feb 15, 2000

US-PAT-NO: 6023799

DOCUMENT-IDENTIFIER: US 6023799 A

TITLE: Actuator for a patient support table

DATE-ISSUED: February 15, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wirth; Robert	Hersbruck			DE
Mueglich; Klaus	Herzogenaurach			DE

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Siemens Aktiengesellschaft	Munich			DE	03

APPL-NO: 09/123998 [PALM]

DATE FILED: July 29, 1998

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
DE	197 33 177	July 31, 1997

INT-CL-ISSUED: [07] A47B 13/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS <u>A61</u> <u>B</u> <u>6/04</u>	20060101
CIPN <u>A61</u> <u>G</u> <u>13/00</u>	20060101
CIPN <u>A61</u> <u>G</u> <u>13/02</u>	20060101
CIPS <u>A61</u> <u>B</u> <u>5/055</u>	20060101
CIPS <u>A61</u> <u>N</u> <u>5/01</u>	20060101

US-CL-ISSUED: 5/601, 5/424, 378/209, 600/410, 600/425

US-CL-CURRENT: 5/601, 378/209, 5/424, 600/410, 600/425

FIELD-OF-CLASSIFICATION-SEARCH: 5/601, 5/600, 5/424, 5/611, 5/943, 600/410,

600/425, 378/209

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4589642</u>	May 1986	Schnelle et al.	
<u>4972852</u>	November 1990	Koob et al.	600/410
<u>5273043</u>	December 1993	Ruik	378/209

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
PS 32 26 374	January 1991	DE	
PS 43 18 686	January 1996	DE	

ART-UNIT: 368

PRIMARY-EXAMINER: Grosz; Alexander

ATTY-AGENT-FIRM: Hill & Simpson

ABSTRACT:

An actuator for a patient support table, such as a table allocated to a magnetic resonance or computed tomography system, that is movable in vertical and horizontal direction, the motion mode being controlled with a control unit dependent on the actuation of the actuator, has two actuation positions enabling the movement mode to which two defined movement modes are respectively allocated. The currently allowable and implementable movement mode is dependent on the momentary table position.

5 Claims, 4 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KMC	Draw D
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☐ 2. Document ID: US 6195578 B1 Relevance Rank: 99

L9: Entry 4 of 5

File: USPT

Feb 27, 2001

US-PAT-NO: 6195578

DOCUMENT-IDENTIFIER: US 6195578 B1

TITLE: Magnetic resonance apparatus for intraoperative imaging

<u>6023799</u>	February 2000	Wirth et al.	5/601
<u>6094760</u>	August 2000	Nonaka et al.	5/601

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
92 18 322 U	January 1994	DE	
197 36 884	March 1999	DE	

ART-UNIT: 377

PRIMARY-EXAMINER: Casler; Brian L.

ATTY-AGENT-FIRM: Schiff Hardin & Waite

ABSTRACT:

A magnetic resonance system with a patient bearing table with an interchangeable-panel receiving mechanism, which table can be used as an operating table. The patient bearing table is mounted at an operating column, which is arranged in front of an insertion end of the magnetic resonance apparatus, such that this table can be swivelled about a vertical axis of rotation.

15 Claims, 3 Drawing figures

Full	Title	Origin	Front	Review	Classification	Date	Reference			Claims	Publ	Unsol
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☐ 3. Document ID: US 6653648 B2 Relevance Rank: 99

L9: Entry 3 of 5

File: USPT

Nov 25, 2003

US-PAT-NO: 6653648

DOCUMENT-IDENTIFIER: US 6653648 B2

TITLE: Radiation protection system

DATE-ISSUED: November 25, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Goldstein; James A.	Bloomfield Hill	MI	48304	

APPL-NO: 09/990073 [PALM]

DATE FILED: November 21, 2001

PARENT-CASE:

PRIORITY STATEMENT This application is a continuation in part and claims the benefit of copending U.S. application Ser. No. 09/638,772 filed Aug. 15, 2000.

☐ 4. Document ID: US 7057194 B2 Relevance Rank: 99

L9: Entry 2 of 5

File: USPT

Jun 6, 2006

US-PAT-NO: 7057194

DOCUMENT-IDENTIFIER: US 7057194 B2

TITLE: Radiation barrier

DATE-ISSUED: June 6, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20060076522 A1

April 13, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Goldstein; James A.	Bloomfield Hills	MI		US

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
ECO Cath-Lab Systems, Inc.	Bloomfield Hills	MI		US	02

APPL-NO: 10/819739 [PALM]

DATE FILED: April 7, 2004

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	G21C11/00	20060101	G21C011/00
IPCS	G21F1/00	20060101	G21F001/00
IPCS	G02B5/00	20060101	G02B005/00
IPCS	H01J1/52	20060101	H01J001/52

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>G02 B 5/00</u>	20060101
CIPP	<u>G21 C 11/00</u>	20060101
CIPS	<u>G21 F 1/00</u>	20060101
CIPS	<u>H01 J 1/52</u>	20060101

US-CL-ISSUED: 250/515.1; 250/505.1

US-CL-CURRENT: 250/515.1; 250/505.1

FIELD-OF-CLASSIFICATION-SEARCH: 250/515.1

See application file for complete search history.

PRIOR-ART-DISCLOSED:

edges, wherein the wall is positionable between the radiation source and the person to prevent radiation from traveling directly between the radiation source and the person, and a radiopaque deflector extending from the wall and obliquely angled relative to the wall.

67 Claims, 17 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIG	Draw D
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☐ 5. Document ID: US 7091508 B2 Relevance Rank: 99

L9: Entry 1 of 5

File: USPT

Aug 15, 2006

US-PAT-NO: 7091508

DOCUMENT-IDENTIFIER: US 7091508 B2

TITLE: Radiation protection system

DATE-ISSUED: August 15, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20040161076 A1

August 19, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Goldstein; James A.	Bloomfield Hill	MI		US

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
ECO Cath-Lab Systems, Inc.	Bloomfield Hills	MI		US		02

APPL-NO: 10/721032 [PALM]

DATE FILED: November 24, 2003

RELATED-US-APPL-DATA:

division parent-doc US 09990073 00 20011121 US 6653648 A child-doc US 107- 21032
 continuation-in-part parent-doc US 09638772 00 20000815 US 6448571 A chil- d-doc US
 09990073

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	G21F3/00	20060101	G21F003/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	<u>G21 F 3/00</u>	20060101

US-CL-ISSUED: 250/515.1; 378/160

A method of performing a medical procedure includes providing a radiation-shielding cubicle having an interior defining a medical personnel region and including a first wall having an opening therein, locating the cubicle with respect to an x-ray table so a portion of the x-ray table extends through the opening into the interior of the cubicle, and separating medical personnel from an x-ray emitter disposed outside of the cubicle using the first wall to shield the medical personnel from radiation emitted by the x-ray emitter.

13 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	Keyword	Drawing
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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Term	Documents
"6023799"	5
6023799S	0
"6023799".USPT.	5
(6023799).USPT.	5

Display Format: FRO Change Format

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Search Results - Record(s) 1 through 13 of 13 returned.

☐ 1. Document ID: US 5551430 A, US 36495 E Relevance Rank: 99

L1: Entry 13 of 13

File: DWPI

Sep 3, 1996

DERWENT-ACC-NO: 1996-411660
DERWENT-WEEK: 200010
COPYRIGHT 2006 DERWENT INFORMATION LTD

TITLE: Radio frequency coil identification and testing interface for scanner - includes localised coil interrogated by identification unit and display interface converting error messages

INVENTOR: BLAKELEY, D M; MOLYNEAUX, D A

PATENT-ASSIGNEE: PICKER INT INC (PXR)

PRIORITY-DATA: 1994US-0286780 (August 5, 1994), 1998US-0146889 (September 2, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>US 5551430 A</u>	September 3, 1996		009	A61B005/055
<u>US 36495 E</u>	January 11, 2000		000	A61B005/055

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
US 5551430A	August 5, 1994	1994US-0286780	
US 36495E	August 5, 1994	1994US-0286780	
US 36495E	September 2, 1998	1998US-0146889	
US 36495E		US <u>5551430</u>	Reissue of

INT-CL (IPC): A61B 5/055

ABSTRACTED-PUB-NO: US 36495E

BASIC-ABSTRACT:

The magnetic resonance system includes a primary magnet system for generating a temporally constant magnetic field through an examination region. A patient couch includes a patient supporting portion for selectively positioning a patient and an insertable coil within the examination region. A plug and socket assembly is connected to the patient supporting portion and the insertable coil, such that the insertable coil is plugged into the patient supporting portion with electrical cabling for the insertable coil extending down the patient supporting portion.

A coil identification component is mounted in the insertable coil in electrical connection with the plug and socket assembly. A coil identification component interrogator is in electrical connection with the plug and socket assembly for interrogating the coil identification component for determining an identification of the inserted coil.

USE - Radio frequency coil front and interface system for magnetic resonance scanner, eg. for localised head or heart scans.

ABSTRACTED-PUB-NO: US 5551430A

EQUIVALENT-ABSTRACTS:

The magnetic resonance system includes a primary magnet system for generating a temporally constant magnetic field through an examination region. A patient couch includes a patient supporting portion for selectively positioning a patient and an insertable coil within the examination region. A plug and socket assembly is connected to the patient supporting portion and the insertable coil, such that the insertable coil is plugged into the patient supporting portion with electrical cabling for the insertable coil extending down the patient supporting portion.

A coil identification component is mounted in the insertable coil in electrical connection with the plug and socket assembly. A coil identification component interrogator is in electrical connection with the plug and socket assembly for interrogating the coil identification component for determining an identification of the inserted coil.

USE - Radio frequency coil front and interface system for magnetic resonance scanner, eg. for localised head or heart scans.

CHOSEN-DRAWING: Dwg.1/4

DERWENT-CLASS: P31

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWIC	Draw.Ds
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☐ 2. Document ID: US 5551430 A Relevance Rank: 95

L1: Entry 12 of 13

File: USPT

Sep 3, 1996

US-PAT-NO: 5551430

DOCUMENT-IDENTIFIER: US 5551430 A

TITLE: RF coil identification and testing interface for NMR systems

DATE-ISSUED: September 3, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Blakeley; Douglas M.	Euclid	OH		
Molyneaux; David A.	Willowick	OH		

ASSIGNEE-INFORMATION:

interface (94) converts error messages from the diagnostic test unit and the coil identification from the look-up table into appropriate format for a display (40). A couch computer (18) controls a motor (20) in accordance with the isocenter of the coil from the look-up table to control positioning of the patient and the localized coil.

21 Claims, 4 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KMC	Draw D
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☐ 3. Document ID: US 5664568 A Relevance Rank: 95

L1: Entry 11 of 13

File: USPT

Sep 9, 1997

US-PAT-NO: 5664568

DOCUMENT-IDENTIFIER: US 5664568 A

TITLE: Split-top, neck and head vascular array for magnetic resonance imaging

DATE-ISSUED: September 9, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Srinivasan; Ravi	Richmond Hts.	OH		
Henderson; Robert G.	Wickliffe	OH		
Elek; Robert A.	Chardon	OH		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Picker International, Inc.	Highland Heights	OH			02

APPL-NO: 08/512722 [PALM]

DATE FILED: August 8, 1995

INT-CL-ISSUED: [06] A61B 5/055

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPN	G01 R 33/36	20060101
CIPS	G01 R 33/34	20060101
CIPN	G01 R 33/32	20060101

US-CL-ISSUED: 128/653.2; 128/653.5, 324/318, 324/322

US-CL-CURRENT: 600/422; 324/318, 324/322

FIELD-OF-CLASSIFICATION-SEARCH: 324/318, 324/322, 128/653.1, 128/653.2, 128/653.3, 128/653.4

See application file for complete search history.

dimensioned to receive a patient's head and a second, neck coil assembly (44) including an anterior coil portion (44a) and a posterior coil portion (44b) dimensioned to receive the patient's neck region. The head and neck coils are partially overlapped. A first cable extends (98a) from the anterior coil portion past the birdcage head coil assembly and a second coaxial cable (98b) extends from the posterior portion past the birdcage head coil assembly. A first decoupling circuit (104a) is disposed in the first coaxial cable beyond a guard ring (106) and a second decoupling circuit (104b) is disposed in the second coaxial cable adjacent the region of overlap between the head and neck coil assemblies. The decoupling circuits are positioned and tuned to prevent radio frequency communication along the coaxial cable sheath between the head and neck coil assemblies. The head and neck coil assemblies are mounted in the mechanical housing which is openable such that an upper half of the guard ring and the birdcage coil and the anterior coil are removable as a unit from the lower half of the guard ring and birdcage coil and the posterior neck coil to facilitate patient access.

24 Claims, 15 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KW	Drawings
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☐ 4. Document ID: US 6119178 A Relevance Rank: 95

L1: Entry 10 of 13

File: USPT

Sep 12, 2000

US-PAT-NO: 6119178

DOCUMENT-IDENTIFIER: US 6119178 A

**** See image for Certificate of Correction ****

TITLE: Communication interface between remote transmission of both compressed video and other data and data exchange with local peripherals

DATE-ISSUED: September 12, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Martin; Bryan R.	Campbell	CA		
Barracough; Keith	Menlo Park	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
8.times.8 Inc.	Santa Clara	CA			02

APPL-NO: 08/977568 [PALM]

DATE FILED: November 25, 1997

INT-CL-ISSUED: [07] G06F 3/00, G06F 13/14

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>G06 F 13/14</u>	20060101
CIPS	<u>G06 F 3/00</u>	20060101

channel. A second interface arrangement exchanges data with, and provides power to, at least one of a variety of peripheral devices. A video data signal processor circuit processes the video data and sends the video data along with the at least one other data type over the first interface arrangement and communicates with the peripheral devices over the second interface arrangement.

26 Claims, 9 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	Keywords	Drawings
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☐ 5. Document ID: US 6134465 A Relevance Rank: 95

L1: Entry 9 of 13

File: USPT

Oct 17, 2000

US-PAT-NO: 6134465

DOCUMENT-IDENTIFIER: US 6134465 A

TITLE: Method for reducing artifacts in MR image acquired with phased array surface coil

DATE-ISSUED: October 17, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Frederick; Perry S.	Waukesha	WI		
Johnson; John A.	Delafield	WI		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Milwaukee	WI			02

APPL-NO: 09/096902 [PALM]

DATE FILED: June 12, 1998

INT-CL-ISSUED: [07] A62B 5/05

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS <u>G01 R 33/34</u>	20060101
CIPS <u>G01 R 33/3415</u>	20060101

US-CL-ISSUED: 600/410

US-CL-CURRENT: 600/410

FIELD-OF-CLASSIFICATION-SEARCH: 600/407, 600/410, 600/421, 600/422, 600/424, 600/425, 324/307, 324/309, 324/316, 324/317, 324/318, 324/322, 382/131
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5399970</u>	March 1995	Pelc et al.	324/309
<u>5551430</u>	September 1996	Blakeley et al.	600/410
<u>5600244</u>	February 1997	Jensen et al.	324/309
<u>5910728</u>	June 1999	Sodickson	324/309
<u>5928148</u>	July 1999	Wang et al.	600/420
<u>5945826</u>	August 1999	Leussler	324/309

ART-UNIT: 377

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Imam; Ali M.

ATTY-AGENT-FIRM: Skarsten Law Offices Cabou; Christian G. Price; Phyllis Y.

ABSTRACT:

In an MR system employing a phased array surface coil, a method is provided for reducing artifacts in an MR image acquired from a region of an object lying within a specified field of view, wherein the field of view has a dimension extending between first and second boundary limits. The method includes the step of positioning the phased array surface coil, which comprises a linear array of coil elements, in selected spatial relationship with the object region. The method further comprises selecting a particular coil element for use in acquiring MR data only if the coil element lies at least partially in a range which extends along the phased array and has a length equal to the field of view dimension, the range lying between positions respectively corresponding to the first and second boundary limits. Each of the selected coil elements is operated to acquire MR data from respectively corresponding subregions of the object region, and the MR image is constructed only from MR data acquired by respective selected coil elements.

16 Claims, 4 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	Draw	Draw
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☐ 6. Document ID: US 6223065 B1 Relevance Rank: 95

L1: Entry 8 of 13

File: USPT

Apr 24, 2001

US-PAT-NO: 6223065

DOCUMENT-IDENTIFIER: US 6223065 B1

TITLE: Automatic coil element selection in large MRI coil arrays

DATE-ISSUED: April 24, 2001

<u>5729129</u>	March 1998	Acker	
<u>5759152</u>	June 1998	Felmlee et al.	600/410
<u>5823960</u>	October 1998	Young et al.	600/415
<u>5882304</u>	March 1999	Ehnholm et al.	600/411
<u>5910728</u>	June 1999	Sodickson	324/309
<u>5924987</u>	July 1999	Meany et al.	600/420
<u>5928148</u>	July 1999	Wang et al.	600/420
<u>6016439</u>	January 2000	Acker	600/411
<u>6084411</u>	July 2000	Giaquinto et al.	324/318

OTHER PUBLICATIONS

International Search Report for counterpart PCT application No. PCT/US99/07851.

ART-UNIT: 377

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J

ABSTRACT:

A method of imaging a subject in an imaging system having a magnetic field and a plurality of receive coils movable with respect to the magnetic field includes sensing the magnetic field by means of at least one sensor having a known position with respect to the subject. At least one of the plurality of receive coils is selected in accordance with the sensing, and is enabled to form an image of the subject. The sensor may include a plurality of sensor coils disposed at differing locations within the magnetic field to sense the differing field amplitudes and/or phases thereof. The differing field intensities cause differing voltage amplitudes and/or phases to be induced on the sensor coils. The differing voltage amplitudes and/or phases are compared to determine the relative positions of the magnetic isocenter of the system and the receive coils to be enabled. Thus, a method for magnetic resonance imaging of a subject in an imaging system having a static magnetic field [B0], a selectively applied gradient magnetic field [B1], a selectively applied transmit excitation radio frequency magnetic field [RF B1], and a plurality of simultaneous data acquisition channels is taught wherein the location of a phased array or other multiple element receive coil and the subject patient with respect to the imaging center of the host magnetic resonance imaging system is determined by sensing the characteristics of one of the magnetic fields.

56 Claims, 5 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	DOC	Draw
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☐ 7. Document ID: US 6356780 B1 Relevance Rank: 95

L1: Entry 7 of 13

File: USPT

Mar 12, 2002

US-PAT-NO: 6356780

DOCUMENT-IDENTIFIER: US 6356780 B1

<u>6092722</u>	July 2000	Heinrichs et al.	235/375
<u>6206829</u>	March 2001	Iliff	600/300

ART-UNIT: 3737

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Lin; Jeoyuh

ATTY-AGENT-FIRM: Fletcher, Yoder & Van Someren

ABSTRACT:

A technique for managing data relating to peripheral devices and subsystems in an imaging system includes providing memory circuitry and, where desired, signal processing circuitry resident in the peripheral devices. Manufacturing data, identification data, service record information, calibration data, and other relevant information may be stored directly in the peripheral devices. The circuitry of the peripherals and subsystems may also include sensors and encryption circuits, and circuits for interfacing the memory and processing circuitry with other components, particularly a controller for an imaging system. The peripherals may include coils and drivers for MRI systems, tables, patient monitors and any other device pertinent to an MRI system. An initialization sequence is performed upon connection of the peripheral to the system, to identify the peripheral and to transfer information needed for examination sequences and other MRI procedures.

48 Claims, 6 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWD	Draw D
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☐ 8. Document ID: US 6545475 B2 Relevance Rank: 95

L1: Entry 6 of 13

File: USPT

Apr 8, 2003

US-PAT-NO: 6545475

DOCUMENT-IDENTIFIER: US 6545475 B2

TITLE: Coil for a magnetic resonance system

DATE-ISSUED: April 8, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kroeckel; Horst	Bamberg			DE
Reykowski; Arne	Erlangen			DE

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Siemens Aktiengesellschaft	Munich			DE	03

☐ 9. Document ID: US 6714013 B2 Relevance Rank: 95

L1: Entry 5 of 13

File: USPT

Mar 30, 2004

US-PAT-NO: 6714013

DOCUMENT-IDENTIFIER: US 6714013 B2

**** See image for Certificate of Correction ****

TITLE: Magnetic resonance imaging receiver/transmitter coils

DATE-ISSUED: March 30, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Misic; George J.	Allison Park	PA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Medrad, Inc.	Indianola	PA			02

APPL-NO: 10/151491 [PALM]

DATE FILED: May 20, 2002

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATIONS This application for patent is a continuation of U.S. application Ser. No. 09/776,132, filed Feb. 2, 2001, now issued as U.S. Pat. No. 6,396,273 on May 28, 2002. The '132 application is a continuation of U.S. application Ser. No. 09/512,093, filed Feb. 24, 2000, now abandoned, which is a divisional of U.S. application Ser. No. 08/979,842, filed Nov. 26, 1997, now issued as U.S. Pat. No. 6,040,697 on Mar. 21, 2000. The contents of the aforementioned documents are incorporated herein by reference.

INT-CL-ISSUED: [07] G01N 3/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS <u>G01 R 33/34</u>	20060101
CIPS <u>G01 R 33/3415</u>	20060101

US-CL-ISSUED: 324/318; 324/322

US-CL-CURRENT: 324/318; 324/322

FIELD-OF-CLASSIFICATION-SEARCH: 324/318, 324/322, 324/300, 324/306, 324/307, 324/309, 324/312, 324/314

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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ABSTRACT:

A magnetic resonance imaging receiver/transmitter coil system for providing images for regions of interest includes a first phased array formed of a plurality of electrically conductive members and defining an array volume and a second phased array formed of a second plurality of electrically conductive members and disposed at least partially within the defined array volume. At least one of the first and second phased arrays is adapted to apply a magnetic field to the defined array volume. At least one of the first and second phased arrays is further adapted to receive said applied magnetic field. The first phased array is extendible to define a further array volume and is provided with a switch for electrically coupling and decoupling an extension to effectively extend the length of the first phased array and thereby define the further array volume. In this manner the length of the first phased array is effectively extended to approximately twice its unextended length.

83 Claims, 7 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Drawings
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☐ 10. Document ID: US 6946836 B2 Relevance Rank: 95

L1: Entry 4 of 13

File: USPT

Sep 20, 2005

US-PAT-NO: 6946836

DOCUMENT-IDENTIFIER: US 6946836 B2

TITLE: Magnetic resonance imaging involving movement of patient's couch

DATE-ISSUED: September 20, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kuhara; Shigehide	Otawara			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kanagawa-Ken			JP	03

APPL-NO: 09/841171 [PALM]

DATE FILED: April 25, 2001

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	2000-124819	April 25, 2000

INT-CL-ISSUED: [07] G01V 3/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS G01 R 33/563	20060101

OTHER PUBLICATIONS

R. A. Jones et al, "Dynamic, contrast enhanced, NMR perfusion imaging of regional cerebral ischaemia in rats using k space substitution", SMRM 1138, Aug. 8-14, 1992.
J. B. Ra et al, "Fast Imaging Method Using Multiple Receiver Coils with Subencoding Data Set", 10.sup.th Annual Meeting SMRM 1240, 1991.
J. B. Ra et al, "Fast Imaging Using Subencoding Data Sets from Multiple Detectors", MRM 30:142-145 (1993).

ART-UNIT: 2859

PRIMARY-EXAMINER: Shrivastav; Brij

ASSISTANT-EXAMINER: Varagas; Dixomara

ATTY-AGENT-FIRM: Nixon & Vanderhye, PC

ABSTRACT:

A magnetic resonance imaging system performing various types of imaging that involves movement of a patient's couch. The system has a patient's couch having a tabletop movable in a predetermined direction passing through a static magnetic field as well as reception multiple RF coils consisting of for example a plurality of coil groups. The tabletop is automatically moved in its longitudinal direction in accordance with a length of each coil group in the predetermined direction. At each moved position, scanning is performed on a given pulse sequence. An echo signal is received through the multiple RF coils, then switched over by an input switchover unit to be sent to a receiving-system circuit. The echo signal is subjected to given processing in this circuit so that it is converted to echo data. The echo data are produced into an MR image by a host computer.

8 Claims, 21 Drawing figures

Full	Title	Publication	Front	Review	Classification	Date	Reference			Claims	Keywords	Drawings
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☐ 11. Document ID: US 6972565 B2 Relevance Rank: 95

L1: Entry 3 of 13

File: USPT

Dec 6, 2005

US-PAT-NO: 6972565

DOCUMENT-IDENTIFIER: US 6972565 B2

TITLE: System, method and apparatus for MRI maintenance and support

DATE-ISSUED: December 6, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Yokoi; Motohisa	Tokyo			JP
Kassai; Yoshimori	Tokyo			JP

ASSIGNEE-INFORMATION:

value or an error record. The manually input data may include a software and/or hardware upgrade record, a customized situation record, a network connection record, a repair record, a check record, a maintenance record or an installation record, for example. Both types of data can be obtained swiftly and faults or malfunctions can be recovered from quickly or even prevented in advance. The stored data may be communicated among a plurality of MRI apparatuses, a service center apparatus and a maintenance support apparatus via a communications network.

9 Claims, 6 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	KWD	Draw D
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☐ 12. Document ID: US 7012430 B2 Relevance Rank: 95

L1: Entry 2 of 13

File: USPT

Mar 14, 2006

US-PAT-NO: 7012430

DOCUMENT-IDENTIFIER: US 7012430 B2

TITLE: Transmit/receive phased array coil system

DATE-ISSUED: March 14, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20040155657 A1

August 12, 2004

INVENTOR-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

Misic; George J.

Allison Park

PA

US

ASSIGNEE-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

TYPE CODE

Medrad, Inc.

Indianola

PA

US

02

APPL-NO: 10/714509 [PALM]

DATE FILED: November 14, 2003

RELATED-US-APPL-DATA:

continuation parent-doc US 10151491 00 20020520 US 6714013 A child-doc US 10714509

continuation parent-doc US 09776132 00 20010202 US 6396273 A child-doc US 10151491

continuation parent-doc US 09512093 00 20000224 ABANDONED child-doc US 097- 76132

division parent-doc US 08979842 00 19971126 US 6040697 A child-doc US 095- 12093

INT-CL-ISSUED:

TYPE IPC

DATE

IPC-OLD

IPCP G01V3/00

20060101

G01V003/00

INT-CL-CURRENT:

TYPE IPC

DATE

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Search Results - Record(s) 1 through 23 of 23 returned.

☐ 1. Document ID: US 6723106 B1 Relevance Rank: 77

L20: Entry 4 of 23

File: USPT

Apr 20, 2004

US-PAT-NO: 6723106

DOCUMENT-IDENTIFIER: US 6723106 B1

TITLE: Surgical manipulator

DATE-ISSUED: April 20, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Charles; Steve T.	Germantown	TN		
Stoughton; Robert	Albuquerque	NM		
Stuart; J. Michael	Corrales	NM		
Bronisz; Larry	Los Alamos	NM		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
MicroDexterity Systems, Inc.	Memphis	TN			02

APPL-NO: 09/856453 [PALM]

DATE FILED: August 24, 2001

PARENT-CASE:

REFERENCE TO RELATED APPLICATIONS This application claims the benefit of U.S. Provisional Application No. 60/109,608 filed on Nov. 23, 1998, which is incorporated by reference.

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE
PCT/US99/27560	November 22, 1999	WO00/30557	Jun 2, 2000	

INT-CL-ISSUED: [07] A61B 19/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>A61 B</u> <u>19/00</u>	20060101
CIPS	<u>B25 J</u> <u>17/02</u>	20060101
CIPS	<u>B25 J</u> <u>9/10</u>	20060101

Supplementary Partial European Search Report (Jun. 2002).
 International Search Report (Feb. 28, 2000).
 SHAI-SYG Motion & Innovations Ltd.; Robolite; copy of internet home page.
 Applicants first became aware of this material in Jun. 1998.
 MicroE Inc.; copies of internet brochure pages of Rotary Micro Encoder and Linear Micro Encoder. Applicants first became aware of this material in Aug. 1998.
 Computer Optical Products, Inc.; copies of internet home page and application notes relating to Hathaway Motion Control. Applicants first became aware of this material in Aug. 1998.
 Renishaw; copies of internet home page and product page for Encoder System. Applicants first became aware of this material in Aug. 1998.
 Del-Tron Precision Inc.; copies of internet brochure order form for Ball Slide Assemblies, Crossed Roller Slide Assemblies and Ball Slide Positioning Stages. Applicants first became aware of this material in Aug. 1998.
 Encoder Products Company; copies of internet product guide for Model 770 C and Model 775. Applicants first became aware of this material in Aug. 1998.
 Stoianovici et al., "A Modular Surgical Robotic System for Guided Percutaneous Procedures." Applicants first became aware of this article in Apr. 2000.

ART-UNIT: 3732

PRIMARY-EXAMINER: Shaver; Kevin

ASSISTANT-EXAMINER: Priddy; Michael B.

ATTY-AGENT-FIRM: Leydig, Voit & Mayer, Ltd.

ABSTRACT:

A surgical manipulator (10) can manipulate a medical tool (12) with one or more degrees of freedom. In preferred embodiments, the manipulator (10) is a parallel mechanism including a plurality of arms (21, 22) pivotally supporting a medical tool (12), with the orientation of the medical tool (12) being adjusted by varying the position of joints (23, 24) mounted on the arms (21, 22). The motions of the joints (23, 24) can be controlled such that the tool (12) is pivoted about a virtual pivot point located within the body wall of a patient (30). The manipulator (10) can enhance the dexterity of an operator and enable the operator to perform medical procedures more easily than by hand.

46 Claims, 34 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMC	Draw D
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☐ 2. Document ID: US 5954647 A Relevance Rank: 74

L20: Entry 13 of 23

File: USPT

Sep 21, 1999

US-PAT-NO: 5954647

DOCUMENT-IDENTIFIER: US 5954647 A

**** See image for Certificate of Correction ****

TITLE: Marker system and related stereotactic procedure

features within the patient (such as a brain tumor or other intracranial target to which radiation is to be applied) can be determined with great precision. Since the bite plate has been molded to uniquely fit to the patient's teeth, it may be removed after an initial imaging of the patient. The bite plate may then be re-attached one or more times to the teeth. An alternate embodiment uses a head ring or head holder such as a head mask system with the LEDs thereon. The head ring is useful for single fraction treatments. A comparison is made between the relative patient position and the position of a medical device and a desired relative positioning. One or more error signals are the result of the comparison and are used for display purposes such that a person may manually null or minimize the errors or as feedback control signals for automatic error correction.

20 Claims, 12 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Pub	Unsol
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☐ 3. Document ID: US 6461314 B1 Relevance Rank: 73

L20: Entry 5 of 23

File: USPT

Oct 8, 2002

US-PAT-NO: 6461314

DOCUMENT-IDENTIFIER: US 6461314 B1

**** See image for Certificate of Correction ****

TITLE: Intrabody hifu applicator

DATE-ISSUED: October 8, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Pant; Bharat B.	Sony Brook	NY		
Acker; David E.	Setauket	NY		
Harhen; Edward Paul	Duxbury	MA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Transurgical, Inc.	Setauket	NY			02

APPL-NO: 09/496988 [PALM]

DATE FILED: February 2, 2000

PARENT-CASE:

CROSS REFERENCE TO RELATED APPLICATIONS This application claims the benefit of provisional patent application Ser. No. 60/118,432 filed on Feb. 2, 1999, the disclosure of which is incorporated by reference herein.

INT-CL-ISSUED: [07] A61H 1/00, A61H 1/02, A61H 5/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPN <u>A61 B 8/00</u>	20060101

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	INDEX	Draw D.
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☐ 4. Document ID: US 5836894 A Relevance Rank: 73

L20: Entry 17 of 23

File: USPT

Nov 17, 1998

US-PAT-NO: 5836894

DOCUMENT-IDENTIFIER: US 5836894 A

TITLE: Apparatus for measuring mechanical parameters of the prostate and for imaging the prostate using such parameters

DATE-ISSUED: November 17, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sarvazyan; Armen P.	E. Brunswick	NJ		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Artann Laboratories	Lambertville	NJ			02

APPL-NO: 08/872561 [PALM]

DATE FILED: June 10, 1997

PARENT-CASE:

CROSS REFERENCE TO RELATED APPLICATION This application is a continuation-in-part of U.S. Pat. application Ser. No. 08/607,645 filed Feb. 27, 1996 which is a continuation-in-part of U.S. Pat. application Ser. No. 07/994,109 filed Dec. 21, 1992 and issued as U.S. Pat. No. 5,524,636 on Jun. 11, 1996. The full disclosures of both applications and the issued patent are incorporated herein by reference.

INT-CL-ISSUED: [06] A61B 5/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>A61 B 5/03</u>	20060101
CIPS	<u>A61 B 5/103</u>	20060101
CIPS	<u>A61 B 8/08</u>	20060101
CIPS	<u>A61 B 1/005</u>	20060101

US-CL-ISSUED: 600/587; 600/561

US-CL-CURRENT: 600/587; 600/561

FIELD-OF-CLASSIFICATION-SEARCH: 600/486, 600/488, 600/561, 600/587
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4711248</u>	December 1987	Steuer et al.	600/561
<u>4722348</u>	February 1988	Ligtenberg et al.	600/488
<u>4809710</u>	March 1989	Williamson	600/561
<u>4869265</u>	September 1989	McEwen	600/561
<u>4893634</u>	January 1990	Kulik et al.	600/561
<u>5067491</u>	November 1991	Taylor, II et al.	600/561
<u>5522399</u>	June 1996	Wilk et al.	600/561
<u>5526820</u>	June 1996	Khoury	600/561

ART-UNIT: 376

PRIMARY-EXAMINER: Nasser; Robert L.

ATTY-AGENT-FIRM: Mathews, Collins, Shepard & Gould, P.A.

ABSTRACT:

A pressure force sensing array is used to measure the surface stress pattern on soft tissues. The pattern of mechanical stress and the changes in the pattern as a function of the applied pressure, position of the array and time are processed to construct an image of the internal structure of the tissues. The detected parameters and processed image provide information useful in the detection and diagnosis of soft tissue pathologies such as breast and prostate tumors. The present invention relates to an apparatus particularly useful for mechanical imaging of the prostate which comprises a transrectal probe. The probe includes a probe shaft, a position sensor for determining the position of the tip and an array of force sensors for determining the pattern of pressure from tissue deformed by the tip.

9 Claims, 34 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Page	Draw D.
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☐ 5. Document ID: US 5922018 A Relevance Rank: 73

L20: Entry 15 of 23

File: USPT

Jul 13, 1999

US-PAT-NO: 5922018

DOCUMENT-IDENTIFIER: US 5922018 A

TITLE: Method for using a transrectal probe to mechanically image the prostate gland

DATE-ISSUED: July 13, 1999

ART-UNIT: 331

PRIMARY-EXAMINER: Nasser; Robert L.

ATTY-AGENT-FIRM: Mathews, Collins, Shepherd & Gould, P.A.

ABSTRACT:

New methods and devices for measuring geometrical and mechanical parameters of body tissues and providing mechanical imaging (MI) of the tissues based on these parameters are described in applicant's parent U.S. patent application Ser. Nos. 08/607,645 and 07/994,109. In essence, a pressure sensing array is used to measure the surface stress pattern on soft tissues, and the pattern of mechanical stress and the changes in the pattern as a function of the applied pressure, the position of the array and time are processed to construct an image of the internal structure of the tissues. The detected parameters and processed image provide sensitive information useful in the detection and diagnosis of soft tissue pathologies such as breast and prostate tumors.

In accordance with the present invention, pressure and position data are acquired by pressing a transrectal probe on soft tissue overlying the prostate. The pattern of pressure responses is determined and conveniently is represented as a superposition of Chebyshev polynomial functions. A three-dimensional mechanical model of the prostate is reconstructed using finite element analysis, and a three-dimensional image is formed by deforming the image of an ideal prostate to conform to the calculated model. Regions of irregularity can be indicated on the image.

14 Claims, 39 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMC	Draw D
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☐ 6. Document ID: US 5785663 A Relevance Rank: 73

L20: Entry 19 of 23

File: USPT

Jul 28, 1998

US-PAT-NO: 5785663

DOCUMENT-IDENTIFIER: US 5785663 A

TITLE: Method and device for mechanical imaging of prostate

DATE-ISSUED: July 28, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sarvazyan; Armen Paruir	East Brunswick	NJ		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Artann Corporation	Lambertville	NJ			02

C.R. Gentle, Mammobarography: a possible method of mass breast screening (1988) J. Biomed. Eng., vol. 10, pp. 124-126.
R.M. Lerner et al., Sono-Elasticity: Medical Elasticity Images Derived From Ultrasound Signals in Mechanically Vibrated Targets (1988) Acoustical Imaging, vol. 16, p. 317.
T.A. Krouskop et al., A Pulsed Doppler Ultrasonic System for Making Non-Invasive Measurement of Mechanical Properties of Soft Tissue (1987) 24 J. Rehab. Res. Dev., vol. 24, p. 1.
A.P. Sarvazyan et al., Biophysical Bases of Elasticity Imaging (1995) Acoustical Imaging, vol. 21, pp. 223-240.
A.P. Sarvazyan et al., A New Philosophy of Medical Imaging (1991) Medical Hypotheses, vol. 36, pp. 327-335.
Y. Yamakoshi et al., Ultrasonic Imaging of Internal Vibration of Soft Tissue Under Forced Vibration (1990), IEEE Transactions on Ultrasonics, Ferroelectric, and Frequency Control, vol. 7(2), p. 45.

ART-UNIT: 331

PRIMARY-EXAMINER: Nasser; Robert L.

ATTY-AGENT-FIRM: Mathews, Collins, Shepherd & Gould

ABSTRACT:

A device and method for visualizing geometrical and mechanical parameters of prostates and diagnosing prostate diseases using a pressure sensor array is disclosed. A probe having an articulated tip for insertion in the rectum applies digital pressure to the prostate similar to that applied by a human finger. A pressure and position/orientation sensor is provided in the tip. Signals from the sensors are used to calculate a virtual pattern of a property such as stress and strain. The virtual and theoretical patterns are compared and differences are used to indicate the presence and location of differing elasticity regions of the tissues being examined and to display an image of the examined prostate.

11 Claims, 23 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	MAC	Draw B
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☐ 7. Document ID: US 5870450 A Relevance Rank: 71

L20: Entry 16 of 23

File: USPT

Feb 9, 1999

US-PAT-NO: 5870450

DOCUMENT-IDENTIFIER: US 5870450 A

**** See image for Certificate of Correction ****

TITLE: Universal radiographic/fluoroscopic digital room

DATE-ISSUED: February 9, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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5185778

February 1993

Magram

378/196

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
0 206 156 A2	December 1986	EP	
WO 96 / 37088	November 1996	WO	

ART-UNIT: 286

PRIMARY-EXAMINER: Porta; David P.

ATTY-AGENT-FIRM: Laff, Whitesel, Conte & Saret, Ltd.

ABSTRACT:

A universal radiographic/fluoroscopic room includes a digital imaging platform adapted to occupy operating and non-operating positions. A park function automatically moves the digital imaging platform between the operating and non-operating positions without requiring operator effort. The digital imaging platform has local and remote control panels having substantially duplicate functions. The remote control panel allows the operator to control operation of the digital imaging platform from a location shielded from X-ray exposure. Methods and apparatus are provided to ensure safe, predictable, and consistent operation from all control panels. The operator selects any available operating mode, including auto-bucky, auto-wall, auto-table, auto-table/wall, servo-tomo, conventional stepping, stepped-digital, auto-step, and auto-step-center modes, using a control panel. The control system automatically determines which system components are required to perform that type of examination, moves the components into operational or storage positions as required, and prepares each component for operation.

18 Claims, 38 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FWC	New P.
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☐ 8. Document ID: US 5768336 A Relevance Rank: 71

L20: Entry 21 of 23

File: USPT

Jun 16, 1998

US-PAT-NO: 5768336

DOCUMENT-IDENTIFIER: US 5768336 A

**** See image for Certificate of Correction ****

TITLE: Universal radiographic/fluoroscopic digital room

DATE-ISSUED: June 16, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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ATTY-AGENT-FIRM: Laff, Whitesel, Conte & Saret Ltd

ABSTRACT:

A universal radiographic/fluoroscopic "room" is constructed according to the present invention by combining a versatile group of X-ray examination system components, electrical and mechanical drive components, and sensing components, under the supervision of a flexible control system, to form a universal diagnostic medical imaging system capable of performing radiographic, fluoroscopic, tomographic, and stepped examinations in several different operator-selectable configurations. The operator selects any available operating mode, including auto-bucky, auto-wall, auto-table, auto-table/wall, servo-tomo, conventional stepping, stepped-digital, auto-step, and auto-step-center modes, using a control panel. The control system automatically determines which system components are required to perform that type of examination, moves the components into operational or storage positions as required, and prepares each component for operation. The operator need not manually reconfigure the equipment. In "stepped-digital" modes useful for peripheral angiography, an under-table X-ray tube and over-table image intensifier execute a series of radiographic exposures at preselected locations. The digital imaging platform is moved while the patient remains stationary. This reduces motion artifacts. For each step, a test fluoroscopic exposure is performed under automatic brightness control to determine an optimum technique. The technique so determined is converted for use in a subsequent radiographic exposure. The operator observes the flow of the contrast medium during the test fluoroscopic exposure and commands the radiographic exposure when the contrast medium arrives at the desired position in the image. Alternatively, the control system may detect the presence of the contrast medium in the image by comparing a change in image contrast with a previously observed threshold change.

45 Claims, 30 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	Keywords	Drawings
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☐ 9. Document ID: US 6100687 A Relevance Rank: 71

L20: Entry 10 of 23

File: USPT

Aug 8, 2000

US-PAT-NO: 6100687

DOCUMENT-IDENTIFIER: US 6100687 A

TITLE: Force-detected magnetic resonance independent of field gradients

DATE-ISSUED: August 8, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Weitekamp; Daniel P.	Altadena	CA		
Leskowitz; Garrett M.	Pasadena	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
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Mechanical Detection of Magnetic Resonance, Rugar, C.S. et al., Letters To Nature Dec. 10, 1992.

ART-UNIT: 282

PRIMARY-EXAMINER: Oda; Christine K.

ASSISTANT-EXAMINER: Fetzner; Tiffany A.

ATTY-AGENT-FIRM: Fish & Richardson P.C.

ABSTRACT:

A system and method for force-detected NMR measurements by applying a spatially homogeneous field at a site of the sample. A composite magnet assembly is implemented to produce the homogeneous field and optimize the detection sensitivity.

77 Claims, 13 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw Ds
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☐ 10. Document ID: US 5636259 A Relevance Rank: 71

L20: Entry 23 of 23

File: USPT

Jun 3, 1997

US-PAT-NO: 5636259

DOCUMENT-IDENTIFIER: US 5636259 A

**** See image for Certificate of Correction ****

TITLE: Universal radiographic/fluoroscopic digital room

DATE-ISSUED: June 3, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Khutoryansky; Oscar	Glenview	IL		
Bleser; Dennis	Glenview	IL		
Kojro; Allan	Glenview	IL		
Simak; Thomas	Warrenville	IL		
Rosevear; Thomas	Forest Park	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Continental X-Ray Corporation	Broadview	IL			02

APPL-NO: 08/443486 [PALM]

DATE FILED: May 18, 1995

INT-CL-ISSUED: [06] H05G 1/02

is converted for use in a subsequent radiographic exposure. The operator observes the flow of the contrast medium during the test fluoroscopic exposure and commands the radiographic exposure when the contrast medium arrives at the desired position in the image. Alternatively, the control system may detect the presence of the contrast medium in the image by comparing a change in image contrast with a previously observed threshold change.

4 Claims, 30 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	Keywords	Drawings
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☐ 11. Document ID: US 5751788 A Relevance Rank: 71

L20: Entry 22 of 23

File: USPT

May 12, 1998

US-PAT-NO: 5751788

DOCUMENT-IDENTIFIER: US 5751788 A

**** See image for Certificate of Correction ****

TITLE: Universal radiographic/fluoroscopic digital room

DATE-ISSUED: May 12, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Khutoryansky; Oscar	Glenview	IL		
Bleser; Dennis	Glenview	IL		
Kojro; Allan	Glenview	IL		
Simak; Thomas	Warrenville	IL		
Rosevear; Thomas	Forest Park	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Continental X-Ray Corporation	Broadview	IL			02

APPL-NO: 08/729989 [PALM]

DATE FILED: October 11, 1996

PARENT-CASE:

This application is a continuation of prior application Ser. No. 08/443,486, filed May 18, 1995 now U.S. Pat. No. 5,636,259.

INT-CL-ISSUED: [06] H05G 1/02

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>A61</u> <u>B</u> <u>6/00</u>	20060101
CIPS	<u>A61</u> <u>B</u> <u>6/04</u>	20060101
CIPS	<u>H05</u> <u>G</u> <u>1/60</u>	20060101

Full	Title	Citation	Print	Review	Classification	Date	Reference			Claims	DOC	Drawings
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☐ 12. Document ID: US 5825843 A Relevance Rank: 70

L20: Entry 18 of 23

File: USPT

Oct 20, 1998

US-PAT-NO: 5825843

DOCUMENT-IDENTIFIER: US 5825843 A

TITLE: Medical inspection system and method for locating position of patient's
table

DATE-ISSUED: October 20, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kobayashi; Shigeo	Chiba			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sony Corporation				JP	03

APPL-NO: 08/638850 [PALM]

DATE FILED: April 29, 1996

PARENT-CASE:

This application is a continuation of application Ser. No. 08/299,259 filed Sep. 1, 1994, now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	5-242027	September 2, 1993

INT-CL-ISSUED: [06] A61B 6/04

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	A61 B 6/10	20060101
CIPS	A61 B 6/04	20060101

US-CL-ISSUED: 378/20; 378/209

US-CL-CURRENT: 378/20; 378/209

FIELD-OF-CLASSIFICATION-SEARCH: 378/20, 378/4, 378/8, 378/95, 378/205, 378/206, 378/208, 378/209, 250/363.02, 250/363.05, 250/363.08

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>3720817</u>	March 1973	Dinwiddie	235/151.11
<u>3908126</u>	September 1975	Hudson et al.	250/320
<u>4158776</u>	June 1979	Barrett	378/20
<u>4613122</u>	September 1986	Manabe	378/20 X
<u>5177778</u>	January 1993	Tsurumaki	378/117
<u>5204629</u>	April 1993	Ueyama	324/318
<u>5273043</u>	December 1993	Ruike	378/209 X
<u>5402462</u>	March 1995	Nobuta	378/20
<u>5411026</u>	May 1995	Carol	128/660.03
<u>5485502</u>	January 1996	Hinton et al.	378/117

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
0087198A3	August 1983	EP	
A 62-152640	July 1987	JP	

ART-UNIT: 256

PRIMARY-EXAMINER: Porta; David P.

ATTY-AGENT-FIRM: Kananen; Ronald P.

ABSTRACT:

A medical inspection system comprising a medical inspection part, a patient table movable relative to the medical inspection part and a position detector for locating the position of the patient table. According to the present invention, the system is controlled by various kinds of control computers so that the position of the patient table with respect to the medical inspection can be securely located. This system is applied to a X-ray CT system. The present invention also provides a method for locating the patient table with respect to the medical inspection part of the system.

15 Claims, 8 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Draw	Draw

☐ 13. Document ID: US 6136274 A Relevance Rank: 70

L20: Entry 7 of 23

File: USPT

Oct 24, 2000

US-PAT-NO: 6136274

after or before processing. Also provided are manual and automated methods for sorting matrices with memories.

18 Claims, 85 Drawing figures

Full	Title	Origin	Front	Review	Classification	Date	Reference			Claims	Draw	U
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☐ 14. Document ID: US 6119033 A Relevance Rank: 70

L20: Entry 9 of 23

File: USPT

Sep 12, 2000

US-PAT-NO: 6119033

DOCUMENT-IDENTIFIER: US 6119033 A

TITLE: Method of monitoring a location of an area of interest within a patient during a medical procedure

DATE-ISSUED: September 12, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Spigelman; Zachary S.	Newton	MA		
Theriault; Richard H.	Lincoln	MA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Biotrack, Inc.	Cambridge	MA			02

APPL-NO: 08/880477 [PALM]

DATE FILED: June 23, 1997

PARENT-CASE:

CROSS REFERENCE We claim, under 35 U.S.C. .sectn. 119(e), the benefit of provisional application serial No. 60/039,285 entitled MEDICAL SENSING AND IMAGING SYSTEM, filed on Mar. 4, 1997.

INT-CL-ISSUED: [07] A61B 5/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPN <u>A61 B 17/00</u>	20060101
CIPS <u>A61 B 19/00</u>	20060101

US-CL-ISSUED: 600/426; 427/429

US-CL-CURRENT: 600/426; 427/429

FIELD-OF-CLASSIFICATION-SEARCH: 600/425-427, 600/429, 600/407, 600/431, 600/414, 600/417, 600/411, 606/130

See application file for complete search history.

for playback.

13 Claims, 28 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	DOC	Drawings
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☐ 15. Document ID: US 7087013 B2 Relevance Rank: 70

L20: Entry 1 of 23

File: USPT

Aug 8, 2006

US-PAT-NO: 7087013

DOCUMENT-IDENTIFIER: US 7087013 B2

TITLE: Steerable segmented endoscope and method of insertion

DATE-ISSUED: August 8, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20030191367 A1

October 9, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Belson; Amir	Cupertino	CA		US
Frey; Paul DeWitt	Redwood City	CA		US
McElhaney; Christine Wei Hsien	San Carlos	CA		US
Milroy; James Craig	Palo Alto	CA		US
Online; Robert Matthew	Redwood City	CA		US
Tartaglia; Joseph M.	Morgan Hill	CA		US

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
NeoGuide Systems, Inc.	Los Gatos	CA		US	02

APPL-NO: 10/402599 [PALM]

DATE FILED: March 27, 2003

RELATED-US-APPL-DATA:

continuation parent-doc US 09969927 00 20011002 US 6610007 A child-doc US 10402599
 continuation-in-part parent-doc US 09790204 00 20010220 US 6468203 A chil- d-doc US
 09969927
 us-provisional-application US 60194140 00 20000403

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	A61B1/00	20060101	A61B001/00

INT-CL-CURRENT:

TYPE	IPC	DATE
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PRIMARY-EXAMINER: Flanagan; Beverly M.

ATTY-AGENT-FIRM: Wilson Sonsini Goodrich & Rosati

ABSTRACT:

A steerable endoscope has an elongated body with a selectively steerable distal portion and an automatically controlled proximal portion. The endoscope body is inserted into a patient and the selectively steerable distal portion is used to select a desired path within the patient's body. When the endoscope body is advanced, an electronic motion controller operates the automatically controlled proximal portion to assume the selected curve of the selectively steerable distal portion. Another desired path is selected with the selectively steerable distal portion and the endoscope body is advanced again. As the endoscope body is further advanced, the selected curves propagate proximally along the endoscope body, and when the endoscope body is withdrawn proximally, the selected curves propagate distally along the endoscope body. This creates a serpentine motion in the endoscope body allowing it to negotiate tortuous curves along a desired path through or around and between organs within the body.

9 Claims, 27 Drawing figures

Full	Title	Creation	Front	Review	Classification	Date	Reference			Claims	Keywords	Drawings
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☐ 16. Document ID: US 6122538 A Relevance Rank: 70

L20: Entry 8 of 23

File: USPT

Sep 19, 2000

US-PAT-NO: 6122538

DOCUMENT-IDENTIFIER: US 6122538 A

**** See image for Certificate of Correction ****

TITLE: Motion--Monitoring method and system for medical devices

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sliwa, Jr.; John William	Los Altos	CA		
Chandler; Paul E.	Santa Cruz	CA		
Marshall; John D.	Redwood City	CA		
Howell; Gelston	Saratoga	CA		
Marple, Jr.; S. Lawrence	San Diego	CA		
Shahidi; Sassan	San Jose	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Acuson Corporation	Mountain View	CA			02

improving the measurements made by some sensors using measurements from other sensors. The system and method also include measuring the position of a medical implement relative to a movable medical imaging device by providing a first and second subsystem on the medical implement and a third and fourth subsystem on the movable medical imaging device. The first subsystem has a sensor of a first type and the second subsystem has a sensor of a second type different from the sensor of the first type. The third subsystem has a sensor of a third type and the fourth subsystem has a sensor of a fourth type different from the third type.

66 Claims, 21 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	K04C	Draw. D.
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☐ 17. Document ID: US 6434416 B1 Relevance Rank: 70

L20: Entry 6 of 23

File: USPT

Aug 13, 2002

US-PAT-NO: 6434416

DOCUMENT-IDENTIFIER: US 6434416 B1

TITLE: Surgical microscope

DATE-ISSUED: August 13, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mizoguchi; Masakazu	Tsukui-gun			JP
Kinukawa; Masahiko	Sagamihara			JP
Fukaya; Takashi	Sagamihara			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Olympus Optical Co., Ltd.	Tokyo			JP	03

APPL-NO: 09/435597 [PALM]

DATE FILED: November 8, 1999

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	10-319190	November 10, 1998

INT-CL-ISSUED: [07] A61B 5/05

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS <u>A61 B 19/00</u>	20060101
CIPS <u>G02 B 21/00</u>	20060101

US-CL-ISSUED: 600/427; 600/429, 600/471, 604/22, 359/372

72 Claims, 15 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	DOC	Drawings
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☐ 18. Document ID: US 7076286 B2 Relevance Rank: 70

L20: Entry 3 of 23

File: USPT

Jul 11, 2006

US-PAT-NO: 7076286

DOCUMENT-IDENTIFIER: US 7076286 B2

TITLE: Surgical microscope

DATE-ISSUED: July 11, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20020151784 A1

October 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mizoguchi; Masakazu	Tsukui-gun			JP
Kinukawa; Masahiko	Sagamihara			JP
Fukaya; Takashi	Sagamihara			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Olympus Optical Co., Ltd.	Tokyo			JP	03

APPL-NO: 10/172868 [PALM]

DATE FILED: June 17, 2002

RELATED-US-APPL-DATA:

continuation parent-doc US 09435597 00 19991108 US 6434416 A child-doc US 10172868

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	10-319190	November 10, 1998

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	A61B6/00	20060101	A61B006/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	<u>A61 B 6/00</u>	20060101

ATTY-AGENT-FIRM: Frishauf, Holtz, Goodman & Chick, P.C.

ABSTRACT:

First sensing means senses the three-dimensional position of a microscope, with an operating site as the origin. Second sensing means senses the three dimensional position of a surgical instrument with respect to the microscope. On the basis of the sensing results of the first sensing means and second sensing means, computing means calculates the three-dimensional position of the surgical instrument, with the operating site as the origin.

35 Claims, 15 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	Keywords	Drawings
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☐ 19. Document ID: US 7082994 B2 Relevance Rank: 70

L20: Entry 2 of 23

File: USPT

Aug 1, 2006

US-PAT-NO: 7082994

DOCUMENT-IDENTIFIER: US 7082994 B2

TITLE: Radially adjustable downhole devices and methods for same

DATE-ISSUED: August 1, 2006

PRIOR-PUBLICATION:

DOC-ID	DATE
US 20040216873 A1	November 4, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Frost, Jr.; Elton	Houston	TX		US
Engels; Ole G.	Houston	TX		US
DiFoggio; Rocco	Houston	TX		US

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Baker Hughes Incorporated	Houston	TX		US	02

APPL-NO: 10/780167 [PALM]
DATE FILED: February 17, 2004

RELATED-US-APPL-DATA:

us-provisional-application US 60448388 00 20030218

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	E21B47/12	20060101	E21B047/12

24 Claims, 8 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIG	Drawings
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☐ 20. Document ID: US 5769640 A Relevance Rank: 70

L20: Entry 20 of 23

File: USPT

Jun 23, 1998

US-PAT-NO: 5769640

DOCUMENT-IDENTIFIER: US 5769640 A

TITLE: Method and system for simulating medical procedures including virtual reality and control method and system for use therein

DATE-ISSUED: June 23, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Jacobus; Charles J.	Ann Arbor	MI		
Griffin; Jennifer Lynn	Ann Arbor	MI		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Cybernet Systems Corporation	Ann Arbor	MI			02

APPL-NO: 08/513488 [PALM]

DATE FILED: August 10, 1995

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation of application Ser. No 08/087,653, filed Jul. 6, 1993, now abandoned, which application is a continuation-in-part of U.S. application Ser. No. 984,324, filed Dec. 2, 1992, now U.S. Pat. No. 5,389,865.

INT-CL-ISSUED: [06] G09B 23/28

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	B25 J 9/16	20060101
CIPS	G06 F 3/00	20060101

US-CL-ISSUED: 434/262; 434/272

US-CL-CURRENT: 434/262; 434/272

FIELD-OF-CLASSIFICATION-SEARCH: 434/262, 434/267, 434/268, 434/272

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4604016</u>	August 1986	Joyce	414/7

OTHER PUBLICATIONS

Fritz, Mark, The World of Virtual Reality, Training, vol. 28 No. 2 pp. 45-50, Feb. 1991.

Miller, Carmen, ONLINE Interviews Dr. Thomas A. Furness III, Virtual Reality Pioneer, Online, Nov. 1992.

ART-UNIT: 332

PRIMARY-EXAMINER: Apley; Richard J.

ASSISTANT-EXAMINER: Rovnak; John Edmund

ATTY-AGENT-FIRM: Gifford, Krass, Groh, Sprinkle, Patmore, Anderson&Citkowski

ABSTRACT:

A method and system for simulating medical procedures is presented. During an actual medical procedure, the actions of a medical instrument are measured and recorded. These actions are generated on a member representative of the medical instrument to simulate the actual medical procedure. Forces acting upon the medical instrument are sensed and simulated in the member using a force/tactile reflecting mechanism. The preferred embodiment uses virtual reality technology including image processing, three-dimensional graphics and display methods, simulated force/tactile reflection, head/hand movement, position sensing, and sound generation to provide an accurate simulation of endoscopic medical procedures.

22 Claims, 10 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw D

☐ 21. Document ID: US 5943914 A Relevance Rank: 70

L20: Entry 14 of 23

File: USPT

Aug 31, 1999

US-PAT-NO: 5943914

DOCUMENT-IDENTIFIER: US 5943914 A

TITLE: Master-slave micromanipulator apparatus

DATE-ISSUED: August 31, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morimoto; Alan K.	Albuquerque	NM		

<u>5476357</u>	December 1995	Arai	414/729
<u>5762458</u>	June 1998	Wang et al.	414/1
<u>5784542</u>	July 1998	Ohm et al.	395/95

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
3-73282	March 1991	JP	414/5
2185593	July 1987	GB	414/2

ART-UNIT: 362

PRIMARY-EXAMINER: Jeffery; John A.

ASSISTANT-EXAMINER: Joyce; William C

ATTY-AGENT-FIRM: Grafe; V. Gerald Abeyta; Andrew

ABSTRACT:

An apparatus based on precision X-Y stages that are stacked. Attached to arms projecting from each X-Y stage are a set of two axis gimbals. Attached to the gimbals is a rod, which provides motion along the axis of the rod and rotation around its axis. A dual-planar apparatus that provides six degrees of freedom of motion precise to within microns of motion. Precision linear stages along with precision linear motors, encoders, and controls provide a robotics system. The motors can be positioned in a remote location by incorporating a set of bellows on the motors and can be connected through a computer controller that will allow one to be a master and the other one to be a slave. Position information from the master can be used to control the slave. Forces of interaction of the slave with its environment can be reflected back to the motor control of the master to provide a sense of force sensed by the slave. Forces impart onto the master by the operator can be fed back into the control of the slave to reduce the forces required to move it.

13 Claims, 12 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Keywords	Drawing
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☐ 22. Document ID: US 6000297 A Relevance Rank: 70

L20: Entry 12 of 23

File: USPT

Dec 14, 1999

US-PAT-NO: 6000297

DOCUMENT-IDENTIFIER: US 6000297 A

TITLE: Master-slave micromanipulator method

DATE-ISSUED: December 14, 1999

ABSTRACT:

A method based on precision X-Y stages that are stacked. Attached to arms projecting from each X-Y stage are a set of two axis gimbals. Attached to the gimbals is a rod, which provides motion along the axis of the rod and rotation around its axis. A dual-planar apparatus that provides six degrees of freedom of motion precise to within microns of motion. Precision linear stages along with precision linear motors, encoders, and controls provide a robotics system. The motors can be remotized by incorporating a set of bellows on the motors and can be connected through a computer controller that will allow one to be a master and the other one to be a slave. Position information from the master can be used to control the slave. Forces of interaction of the slave with its environment can be reflected back to the motor control of the master to provide a sense of force sensed by the slave. Forces import onto the master by the operator can be fed back into the control of the slave to reduce the forces required to move it.

9 Claims, 12 Drawing figures

Full	Title	Citation	Front	Review	Classification	Data	Reference		Claims	Code	Drawings
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☐ 23. Document ID: US 6016607 A Relevance Rank: 70

L20: Entry 11 of 23

File: USPT

Jan 25, 2000

US-PAT-NO: 6016607

DOCUMENT-IDENTIFIER: US 6016607 A

TITLE: Coordinated X-Y stage apparatus

DATE-ISSUED: January 25, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morimoto; Alan K.	Albuquerque	NM		
Kozlowski; David M.	Albuquerque	NM		
Charles; Steven T.	Germantown	TN		
Spalding; James A.	Springfield	KY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sandia Corporation	Albuquerque	NM			02

APPL-NO: 09/301500 [PALM]

DATE FILED: April 28, 1999

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATIONS This is a divisional of U.S. patent application Ser. No. 08/827,144 filed Mar. 27, 1997, incorporated herein by reference.

gimbals is a rod, which provides motion along the axis of the rod and rotation around its axis. A dual-planar apparatus that provides six degrees of freedom of motion precise to within microns of motion.

12 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	NUM	Draw
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Term	Documents
(18 AND 19) .USPT.	23
(L19 AND L18) .USPT.	23

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Search Results - Record(s) 1 through 35 of 61 returned.

☐ 1. Document ID: US 6822447 B1 Relevance Rank: 76

L18: Entry 8 of 61

File: USPT

Nov 23, 2004

US-PAT-NO: 6822447

DOCUMENT-IDENTIFIER: US 6822447 B1

TITLE: Spherical magnetic resonance imaging apparatus

DATE-ISSUED: November 23, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Yamagata; Hitoshi	Tochigi			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/391399 [PALM]

DATE FILED: September 8, 1999

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	10-279172	September 30, 1998

INT-CL-ISSUED: [07] G01V 3/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPP <u>G01 R 33/28</u>	20060101

US-CL-ISSUED: 324/318; 324/320, 324/309

US-CL-CURRENT: 324/318; 324/309, 324/320

FIELD-OF-CLASSIFICATION-SEARCH: 324/318, 324/320, 324/322, 324/307, 324/309, 324/319, 600/410, 600/411, 600/422, 600/415, 335/299, 335/216

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	AMC	Unpat
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☐ 2. Document ID: US 7034535 B2 Relevance Rank: 75

L18: Entry 5 of 61

File: USPT

Apr 25, 2006

US-PAT-NO: 7034535

DOCUMENT-IDENTIFIER: US 7034535 B2

TITLE: Three-dimensional positioning of the patient couch at the center of the static or gradient magnetic field in MRI

DATE-ISSUED: April 25, 2006

PRIOR-PUBLICATION:

DOC-ID	DATE
US 20040263171 A1	December 30, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Yamagata; Hitoshi	Tochigi			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kanagawa-ken			JP	03

APPL-NO: 10/896083 [PALM]

DATE FILED: July 22, 2004

RELATED-US-APPL-DATA:

division parent-doc US 09391399 00 19990908 US 6822447 A child-doc US 108- 96083

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	P10-279172	September 30, 1998

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	G01V3/00	20060101	G01V003/00
IPCS	A61B5/055	20060101	A61B005/055

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>A61 B 5/055</u>	20060101
CIPP	<u>G01 V 3/00</u>	20060101

US-CL-ISSUED: 324/318; 324/309, 324/320, 600/415

US-CL-CURRENT: 324/318; 324/309, 324/320, 600/415

PRIMARY-EXAMINER: Gutierrez; Diego

ASSISTANT-EXAMINER: Fetzner; Tiffany A.

ATTY-AGENT-FIRM: Nixon & Vanderhye, PC

ABSTRACT:

In a magnetic resonance imaging apparatus, a transmitting/receiving coil is attached to a patient at a region of interest and disposed within a static magnetic field, a radio-frequency magnetic field, and a gradient magnetic field and an image of the patient is obtained. A tabletop is used to move the patient in the static field in a horizontal direction within a horizontal plane and up and down in a direction that is perpendicular to the horizontal plane, a patient couch controller causing the tabletop to move, based on the position of the region of interest obtained from the image, so that the position of the region of interest is caused to coincide in three dimensions with the center of the static magnetic field and/or the gradient magnetic field.

14 Claims, 18 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	ROC	Draw D.
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☐ 3. Document ID: US 5825843 A Relevance Rank: 75

L18: Entry 48 of 61

File: USPT

Oct 20, 1998

US-PAT-NO: 5825843

DOCUMENT-IDENTIFIER: US 5825843 A

TITLE: Medical inspection system and method for locating position of patient's table

DATE-ISSUED: October 20, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kobayashi; Shigeo	Chiba			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sony Corporation				JP	03

APPL-NO: 08/638850 [PALM]

DATE FILED: April 29, 1996

PARENT-CASE:

This application is a continuation of application Ser. No. 08/299,259 filed Sep. 1, 1994, now abandoned.

A medical inspection system comprising a medical inspection part, a patient table movable relative to the medical inspection part and a position detector for locating the position of the patient table. According to the present invention, the system is controlled by various kinds of control computers so that the position of the patient table with respect to the medical inspection can be securely located. This system is applied to a X-ray CT system. The present invention also provides a method for locating the patient table with respect to the medical inspection part of the system.

15 Claims, 8 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Keywords	Drawings
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☐ 4. Document ID: US 6723106 B1 Relevance Rank: 68

L18: Entry 9 of 61

File: USPT

Apr 20, 2004

US-PAT-NO: 6723106

DOCUMENT-IDENTIFIER: US 6723106 B1

TITLE: Surgical manipulator

DATE-ISSUED: April 20, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Charles; Steve T.	Germantown	TN		
Stoughton; Robert	Albuquerque	NM		
Stuart; J. Michael	Corrales	NM		
Bronisz; Larry	Los Alamos	NM		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
MicroDexterity Systems, Inc.	Memphis	TN			02

APPL-NO: 09/856453 [PALM]

DATE FILED: August 24, 2001

PARENT-CASE:

REFERENCE TO RELATED APPLICATIONS This application claims the benefit of U.S. Provisional Application No. 60/109,608 filed on Nov. 23, 1998, which is incorporated by reference.

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE
PCT/US99/27560	November 22, 1999	WO00/30557	Jun 2, 2000	

INT-CL-ISSUED: [07] A61B 19/00

<u>5408409</u>	April 1995	Glassman et al.	
<u>5415182</u>	May 1995	Chin et al.	
<u>5417210</u>	May 1995	Funda et al.	
<u>5425616</u>	June 1995	Arai et al.	
<u>5445166</u>	August 1995	Taylor	
<u>5464013</u>	November 1995	Lemelson	
<u>5494034</u>	February 1996	Schlondorff et al.	
<u>5564436</u>	October 1996	Hakky et al.	
<u>5568593</u>	October 1996	Demarest et al.	
<u>5572999</u>	November 1996	Funda et al.	
<u>5584292</u>	December 1996	Cheung	
<u>5628327</u>	May 1997	Unger et al.	
<u>5630431</u>	May 1997	Taylor	
<u>5643286</u>	July 1997	Warner et al.	
<u>5647373</u>	July 1997	Patiielti	
<u>5695500</u>	December 1997	Taylor et al.	
<u>5748767</u>	May 1998	Raab	
<u>5749362</u>	May 1998	Funda et al.	
<u>5776153</u>	July 1998	Rees	
<u>5782764</u>	July 1998	Werne	
<u>5784542</u>	July 1998	Ohm et al.	
<u>5795291</u>	August 1998	Koros et al.	
<u>5797900</u>	August 1998	Madhani et al.	606/1
<u>5800423</u>	September 1998	Jensen	
<u>5803912</u>	September 1998	Siczek et al.	
<u>5806518</u>	September 1998	Mittelstadt	
<u>5828197</u>	October 1998	Martin et al.	
<u>5833656</u>	November 1998	Smith et al.	
<u>5851183</u>	December 1998	Bucholz	
<u>5865744</u>	February 1999	Lemelson	
<u>5887121</u>	March 1999	Funda et al.	
<u>5943914</u>	August 1999	Morimoto et al.	
<u>5950629</u>	September 1999	Taylor et al.	
<u>5951475</u>	September 1999	Gueziec et al.	
<u>5976156</u>	November 1999	Taylor et al.	
<u>6000297</u>	December 1999	Morimoto et al.	
<u>6021342</u>	February 2000	Brabrand	
<u>6024695</u>	February 2000	Taylor et al.	
<u>6106511</u>	August 2000	Jensen	606/1

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
0009447	April 1980	EP	
0 649 217	April 1995	EP	
0 654 244	May 1995	EP	

WO 98/09580	March 1998	WO
WO/9910137	March 1999	WO
WO/0028882	May 2000	WO

OTHER PUBLICATIONS

Supplementary Partial European Search Report (Jun. 2002).

International Search Report (Feb. 28, 2000).

SHAI-SYG Motion & Innovations Ltd.; Robolite; copy of internet home page.

Applicants first became aware of this material in Jun. 1998.

MicroE Inc.; copies of internet brochure pages of Rotary Micro Encoder and Linear Micro Encoder. Applicants first became aware of this material in Aug. 1998.

Computer Optical Products, Inc.; copies of internet home page and application notes relating to Hathaway Motion Control. Applicants first became aware of this material in Aug. 1998.

Renishaw; copies of internet home page and product page for Encoder System. Applicants first became aware of this material in Aug. 1998.

Del-Tron Precision Inc.; copies of internet brochure order form for Ball Slide Assemblies, Crossed Roller Slide Assemblies and Ball Slide Positioning Stages. Applicants first became aware of this material in Aug. 1998.

Encoder Products Company; copies of internet product guide for Model 770 C and Model 775. Applicants first became aware of this material in Aug. 1998.

Stoianovici et al., "A Modular Surgical Robotic System for Guided Percutaneous Procedures." Applicants first became aware of this article in Apr. 2000.

ART-UNIT: 3732

PRIMARY-EXAMINER: Shaver; Kevin

ASSISTANT-EXAMINER: Priddy; Michael B.

ATTY-AGENT-FIRM: Leydig, Voit & Mayer, Ltd.

ABSTRACT:

A surgical manipulator (10) can manipulate a medical tool (12) with one or more degrees of freedom. In preferred embodiments, the manipulator (10) is a parallel mechanism including a plurality of arms (21, 22) pivotally supporting a medical tool (12), with the orientation of the medical tool (12) being adjusted by varying the position of joints (23, 24) mounted on the arms (21, 22). The motions of the joints (23, 24) can be controlled such that the tool (12) is pivoted about a virtual pivot point located within the body wall of a patient (30). The manipulator (10) can enhance the dexterity of an operator and enable the operator to perform medical procedures more easily than by hand.

46 Claims, 34 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMC	Draw.D
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☐ 5. Document ID: US 6676669 B2 Relevance Rank: 66

ART-UNIT: 3732

PRIMARY-EXAMINER: Philogene; Pedro

ATTY-AGENT-FIRM: Leydig, Voit & Mayer, Ltd.

ABSTRACT:

The present invention provides a surgical manipulator which capable of manipulating a surgical or medical tool in up to six degrees of freedom. The manipulator has a relatively lightweight, compact design as a result of the use of high force to mass ratio actuators. The manipulator includes a mounting fixture which permits the manipulator to be fixed relative to a portion of a body of a patient.

55 Claims, 8 Drawing figures

Pub	Title	Citation	Front	Review	Classification	Date	Reference		Claims	K040	Draw D
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☐ 6. Document ID: US 5525905 A Relevance Rank: 66

L18: Entry 56 of 61

File: USPT

Jun 11, 1996

US-PAT-NO: 5525905

DOCUMENT-IDENTIFIER: US 5525905 A

TITLE: Patient handling system for use on multiple imaging systems

DATE-ISSUED: June 11, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mohapatra; Surya N.	Chesterland	OH		
Margosian; Paul M.	Lakewood	OH		
Awig; Fredrick F.	Lyndhurst	OH		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Picker International, Inc.	Cleveland	OH			02

APPL-NO: 08/342584 [PALM]

DATE FILED: November 21, 1994

INT-CL-ISSUED: [06] G01V 3/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	A61 B 5/055	20060101
CIPS	A61 B 6/04	20060101

US-CL-ISSUED: 324/318; 128/653.5

US-CL-CURRENT: 324/318; 378/20, 378/4, 600/415

FIELD-OF-CLASSIFICATION-SEARCH: 324/318, 324/322, 324/300, 324/307, 324/309, 128/653.5

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4567894</u>	February 1986	Bergman	128/653.5
<u>4727328</u>	February 1988	Carper et al.	324/318
<u>5178146</u>	January 1993	Giese	128/653.5

OTHER PUBLICATIONS

Title: Industrial Design 25th Annual Design Review; (1979) Author: Edward K. Carpenter; pp.: 106 and 109.

Title: Synerview CT; Brochure of Picker Corporation; (Apr. 1979); pp.: 1-20.

ART-UNIT: 225

PRIMARY-EXAMINER: Arana; Louis M.

ATTY-AGENT-FIRM: Gurin; Timothy B. Fry; John J.

ABSTRACT:

A object handling system is moveable between various diagnostic imaging apparatus for imaging thereby. The handling system has an object handling computer 34 for storing object identification data and imaging data. Selectively linking the object handling computer 34 with a first imaging system provides the first imaging system with access to the object identification data and imaging data for use in the production of diagnostic images thereby. Similarly, the object identification data and imaging data are available to a second imaging system for use in the production of diagnostic images thereby when the object handling computer 34 is selectively linked thereto. The object identification data is associated with the diagnostic images produced by various imaging system for subsequent correlation of the object with the diagnostic images of the object. The object handling computer 34 also modifies various automated table movement apparatus as a function of the imaging system to which the handling system is selectively linked.

24 Claims, 6 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	Foot	Unsol
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☐ 7. Document ID: US 6314310 B1 Relevance Rank: 66

EPO Supplementary Search Report (Dated Mar. 14, 2001).

ART-UNIT: 377

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J

ATTY-AGENT-FIRM: Capezzuto; Louis J.

ABSTRACT:

Apparatus for X-ray guided surgery, including a reference element (20), which is placed in contact with the body (32) of a subject. The element includes a plurality of fiducial marks (22a, 22b, 22c) and a first coordinate sensing device (24), in predetermined, fixed positions in the element (20). A surgical tool (36), having a distal end for insertion into the body (32), includes a second coordinate sensing device (40) fixed thereto. A fluoroscope (54) forms an X-ray image of the body, including the fiducial marks. A computer analyzes the image to determine the position of the reference element in the image, so as to find coordinates of the first coordinate sensing device relative to the image, and registers the position of the tool with the X-ray image by referring coordinates of the second coordinate sensing device to the known coordinates of the first position sensor.

28 Claims, 10 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIG	Draw D
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☐ 8. Document ID: US 6547782 B1 Relevance Rank: 66

L18: Entry 19 of 61

File: USPT

Apr 15, 2003

US-PAT-NO: 6547782

DOCUMENT-IDENTIFIER: US 6547782 B1

TITLE: System and method for augmentation of surgery

DATE-ISSUED: April 15, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell Highsmith	Ossining	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines, Corp.	Armonk	NY				02

APPL-NO: 09/638515 [PALM]

DATE FILED: August 11, 2000

PARENT-CASE:

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	MMIC	Drawings
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☐ 9. Document ID: US 5402801 A Relevance Rank: 66

L18: Entry 59 of 61

File: USPT

Apr 4, 1995

US-PAT-NO: 5402801

DOCUMENT-IDENTIFIER: US 5402801 A

TITLE: System and method for augmentation of surgery

DATE-ISSUED: April 4, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell H.	Ossining	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines Corporation	Armonk	NY			02	

APPL-NO: 08/234825 [PALM]

DATE FILED: April 28, 1994

PARENT-CASE:

This is a divisional of application No. 08/147,008, filed Nov. 2, 1993, which is a continuation of application No. 07/714,816, filed Jun. 13, 1991; abandoned.

INT-CL-ISSUED: [06] A61B 17/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	A61 B 19/00	20060101
CIPS	B25 J 9/04	20060101
CIPS	B25 J 17/02	20060101
CIPS	B25 J 9/02	20060101
CIPN	A61 B 17/00	20060101

US-CL-ISSUED: 128/898

US-CL-CURRENT: 128/898

FIELD-OF-CLASSIFICATION-SEARCH: 128/6, 128/898, 606/1, 606/11, 606/12, 606/19, 606/46, 606/97

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

ART-UNIT: 335

PRIMARY-EXAMINER: Kamm; William E.

ATTY-AGENT-FIRM: Perman & Green

ABSTRACT:

The system and method includes a manipulator for manipulating a surgical instrument relative to a patient's body and, a position sensor for sensing the position of the surgical instrument relative to the patient's body. The manipulator can be manually or computer actuated and can have brakes to limit movement. In a preferred embodiment, orthogonal only motion between members of the manipulator is provided. The position sensor includes beacons connected to the patient and manipulator or surgical instrument and, a three dimensional beacon sensor adapted to sense the location and position of the beacons. Redundant joint sensors on the manipulator may also be provided. The system and method uses a computer to actively interact with the surgeon and can use various different input and output devices and modes.

11 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw.D
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☐ 10. Document ID: US 6231526 B1 Relevance Rank: 66

L18: Entry 29 of 61

File: USPT

May 15, 2001

US-PAT-NO: 6231526

DOCUMENT-IDENTIFIER: US 6231526 B1

TITLE: System and method for augmentation of surgery

DATE-ISSUED: May 15, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell Highsmith	Ossining	NY		
Kim; Yong-yil	Seoul			KR

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines Corporation	Armonk	NY				02

APPL-NO: 09/456645 [PALM]
 DATE FILED: December 8, 1999

PARENT-CASE:

This is a divisional of application No. 09/306,558 filed May 6, 1999, now U.S. Pat. No. 6,024,695, which is a divisional of application No. 08/234,294 filed Apr. 28,

☐ 11. Document ID: US 5279309 A Relevance Rank: 66

L18: Entry 60 of 61

File: USPT

Jan 18, 1994

US-PAT-NO: 5279309

DOCUMENT-IDENTIFIER: US 5279309 A

TITLE: Signaling device and method for monitoring positions in a surgical operation

DATE-ISSUED: January 18, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell H.	Ossining	NY		
Kim; Yong-yil	Seoul			KR

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines Corporation	Armonk	NY				02

APPL-NO: 07/919450 [PALM]

DATE FILED: July 27, 1992

PARENT-CASE:

This is a divisional of copending application Ser. No. 07/714,816 filed on Jun. 13, 1991.

INT-CL-ISSUED: [05] A61B 5/11

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>A61 B 19/00</u>	20060101
CIPS	<u>B25 J 9/04</u>	20060101
CIPS	<u>B25 J 17/02</u>	20060101
CIPS	<u>B25 J 9/02</u>	20060101
CIPN	<u>A61 B 17/00</u>	20060101

US-CL-ISSUED: 128/782

US-CL-CURRENT: 600/595

FIELD-OF-CLASSIFICATION-SEARCH: 128/630, 128/653.1, 128/654, 128/664, 128/665, 128/774, 128/775, 128/777, 128/782, 128/907, 604/20, 116/202, 116/209
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	DOC	Drawings
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☐ 12. Document ID: US 5630431 A Relevance Rank: 66

L18: Entry 55 of 61

File: USPT

May 20, 1997

US-PAT-NO: 5630431

DOCUMENT-IDENTIFIER: US 5630431 A

TITLE: System and method for augmentation of surgery

DATE-ISSUED: May 20, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell H.	Ossining	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines Corporation	Armonk	NY			02	

APPL-NO: 08/321320 [PALM]

DATE FILED: October 11, 1994

PARENT-CASE:

This is a divisional of application Ser. No. 08/223,969 filed Apr. 6, 1994 which is a divisional application of application Ser. No. 08/147,008 filed Nov. 2, 1993, which is a continuation of application Ser. No. 07/714,816 filed Jun. 13, 1991; abandoned.

INT-CL-ISSUED: [06] A61B 19/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	A61 B 19/00	20060101
CIPN	A61 B 17/00	20060101

US-CL-ISSUED: 128/897

US-CL-CURRENT: 128/897

FIELD-OF-CLASSIFICATION-SEARCH: 606/130, 128/697
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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"Watchdog Safety Computer Design And Implementation" by Kilman et al., RI/SME Robots 8 Conference, Jun. 1984.

"Development and Initial Clinical Evaluation of Pre-Robotic and Robotic Retraction Systems For Surgery" by McEwen et al., Proceeding Of Second Workshop On Medical And Health Care Robotics, IARP, Newcastle, OK, Sep. 5-7, 1989 and IEEE Engineering In Medicine And Biology Society 11th Annual International Conference, 1989. Klinger Catalog 90, p. 108, 1990.

ART-UNIT: 335

PRIMARY-EXAMINER: Kamm; William E.

ATTY-AGENT-FIRM: Perman & Green

ABSTRACT:

The system and method includes a manipulator for manipulating a surgical instrument relative to a patient's body and, a position sensor for sensing the position of the surgical instrument relative to the patient's body. The manipulator can be manually or computer actuated and can have brakes to limit movement. In a preferred embodiment, orthogonal only motion between members of the manipulator is provided. The position sensor includes beacons connected to the patient and manipulator or surgical instrument and, a three dimensional beacon sensor adapted to sense the location and position of the beacons. Redundant joint sensors on the manipulator may also be provided. The system and method uses a computer to actively interact with the surgeon and can use various different input and output devices and modes.

5 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWAC	Draw D
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☐ 13. Document ID: US 5976156 A Relevance Rank: 66

L18: Entry 38 of 61

File: USPT

Nov 2, 1999

US-PAT-NO: 5976156

DOCUMENT-IDENTIFIER: US 5976156 A

**** See image for Certificate of Correction ****

TITLE: Stereotaxic apparatus and method for moving an end effector

DATE-ISSUED: November 2, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell Highsmith	Ossining	NY		
Kim; Yong-yil	Seoul			KR

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines	Armonk	NY				02

Medicine & Biology Society 11th Annual International Conference.

"Watchdog Safety Computer Design And Implementation" by Kilman et al., RI/SME Robots 8 Conference, Jun. 1984.

"Development and Initial Clinical Evaluation of Pre-Robotic and Robotic Retraction Systems For Surgery" by McEwen et al., Proceeding Of Second Workshop On Medical And Health Care Robotics, IARP, Newcastle, OK, Sep. 5-7, 1989 and IEEE Engineering In Medicine And Biology Society 11th Annual International Conference, 1989.

Klinger Catalog 90, p. 108, 1990.

ART-UNIT: 377

PRIMARY-EXAMINER: Kamm; William E.

ATTY-AGENT-FIRM: Perman & Green, LLP

ABSTRACT:

The system and method includes a manipulator for manipulating a surgical instrument relative to a patient's body and, a position sensor for sensing the position of the surgical instrument relative to the patient's body. The manipulator can be manually or computer actuated and can have brakes to limit movement. In a preferred embodiment, orthogonal only motion between members of the manipulator is provided. The position sensor includes beacons connected to the patient and manipulator or surgical instrument and, a three dimensional beacon sensor adapted to sense the location and position of the beacons. Redundant joint sensors on the manipulator may also be provided. The system and method uses a computer to actively interact with the surgeon and can use various different input and output devices and modes.

26 Claims, 11 Drawing figures

Full	Title	Station	Front	Review	Classification	Date	Reference			Claims	KWC	Draw Ds
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☐ 14. Document ID: US 6024695 A Relevance Rank: 66

L18: Entry 34 of 61

File: USPT

Feb 15, 2000

US-PAT-NO: 6024695

DOCUMENT-IDENTIFIER: US 6024695 A

**** See image for Certificate of Correction ****

TITLE: System and method for augmentation of surgery

DATE-ISSUED: February 15, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell Highsmith	Ossining	NY		
Kim; Yong-yil	Seoul			KR

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
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may also be provided. The system and method uses a computer to actively interact with the surgeon and can use various different input and output devices and modes.

16 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Draw	U
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☐ 15. Document ID: US 5445166 A Relevance Rank: 66

L18: Entry 57 of 61

File: USPT

Aug 29, 1995

US-PAT-NO: 5445166

DOCUMENT-IDENTIFIER: US 5445166 A

TITLE: System for advising a surgeon

DATE-ISSUED: August 29, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell H.	Ossining	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines Corporation	Armonk	NY			02	

APPL-NO: 08/223862 [PALM]

DATE FILED: April 6, 1994

PARENT-CASE:

This is a divisional of copending application No. 08/147,008 filed Nov. 2, 1993, which is a continuation of application No. 07/714,816 filed Jun. 13, 1991; abandoned.

INT-CL-ISSUED: [06] A61B 17/36

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	A61 B 19/00	20060101
CIPS	B25 J 9/04	20060101
CIPS	B25 J 17/02	20060101
CIPS	B25 J 9/02	20060101
CIPN	A61 B 17/00	20060101

US-CL-ISSUED: 128/897

US-CL-CURRENT: 128/897

FIELD-OF-CLASSIFICATION-SEARCH: 128/897, 434/262, 434/263, 606/1

"Robot Total Hip Replacement Surgery In Dogs" by Taylor et al., IEEE Engineering In Medicine & Biology Society 11th Annual International Conference.

"Watchdog Safety Computer Design And Implementation" by Kilman et al., RI/SME Robots 8 Conference, Jun. 1984.

"Development and Initial Clinical Evaluation of Pre-Robotic and Robotic Retraction Systems For Surgery" by McEwen et al., Proceedings Of Second Workshop On Medical And Health Care Robotics, IARP, Newcastle, Okla., Sep. 5-7, 1989 and IEEE Engineering In Medicine And Biology Society 11th Annual International Conference, 1989.

Klinger Catalog 90, p. 108, 1990.

ART-UNIT: 335

PRIMARY-EXAMINER: Kamm; William E.

ATTY-AGENT-FIRM: Perman & Green

ABSTRACT:

The system is for assisting a surgeon in positioning an article relative to a target position. The system includes a computer for determining a surgical plan, sensors for sensing execution of the surgical plan by the surgeon, an advisor for advising the surgeon based upon comparison of the surgical plan and its execution and, selecting of different types of advise to give the surgeon. The system can also have an input for changing the surgical plan in the computer during surgery.

13 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWAC	Draw D
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☐ 16. Document ID: US 5695500 A Relevance Rank: 66

L18: Entry 53 of 61

File: USPT

Dec 9, 1997

US-PAT-NO: 5695500

DOCUMENT-IDENTIFIER: US 5695500 A

**** See image for Certificate of Correction ****

TITLE: System for manipulating movement of a surgical instrument with computer controlled brake

DATE-ISSUED: December 9, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell Highsmith	Ossining	NY		
Kim; Yong-yil	Seoul			KR

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines	Armonk	NY				02

☐ 17. Document ID: US 5950629 A Relevance Rank: 66

L18: Entry 40 of 61

File: USPT

Sep 14, 1999

US-PAT-NO: 5950629

DOCUMENT-IDENTIFIER: US 5950629 A

**** See image for Certificate of Correction ****

TITLE: System for assisting a surgeon during surgery

DATE-ISSUED: September 14, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Russell Highsmith	Ossining	NY		
Kim; Yong-yil	Seoul			KR

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines Corporation	Armonk	NY				02

APPL-NO: 08/234294 [PALM]

DATE FILED: April 28, 1994

PARENT-CASE:

This is a divisional of application Ser. No. 08/147,008 filed Nov. 2, 1993, which is a continuation of application Ser. No. 07/714,816 filed Jun. 13, 1991; abandoned.

INT-CL-ISSUED: [06] A61B 19/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	<u>A61 B 19/00</u>	20060101
CIPS	<u>B25 J 9/04</u>	20060101
CIPS	<u>B25 J 17/02</u>	20060101
CIPS	<u>B25 J 9/02</u>	20060101
CIPN	<u>A61 B 17/00</u>	20060101

US-CL-ISSUED: 128/897

US-CL-CURRENT: 128/897

FIELD-OF-CLASSIFICATION-SEARCH: 128/898, 128/897, 128/670, 128/671, 128/200, 434/262, 606/37, 606/130

See application file for complete search history.

PRIOR-ART-DISCLOSED:

ART-UNIT: 377

PRIMARY-EXAMINER: Kamm; William E.

ATTY-AGENT-FIRM: Perman & Green, LLP

ABSTRACT:

The system and method includes a manipulator for manipulating a surgical instrument relative to a patient's body and, a position sensor for sensing the position of the surgical instrument relative to the patient's body. The manipulator can be manually or computer actuated and can have brakes to limit movement. In a preferred embodiment, orthogonal only motion between members of the manipulator is provided. The position sensor includes beacons connected to the patient and manipulator or surgical instrument and, a three dimensional beacon sensor adapted to sense the location and position of the beacons. Redundant joint sensors on the manipulator may also be provided. The system and method uses a computer to actively interact with the surgeon and can use various different input and output devices and modes.

7 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMC	Draw. D.
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☐ 18. Document ID: US 5954647 A Relevance Rank: 64

L18: Entry 39 of 61

File: USPT

Sep 21, 1999

US-PAT-NO: 5954647

DOCUMENT-IDENTIFIER: US 5954647 A

**** See image for Certificate of Correction ****

TITLE: Marker system and related stereotactic procedure

DATE-ISSUED: September 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bova; Frank J.	Gainesville	FL		
Friedman; William A.	Gainesville	FL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
University of Florida Research Foundation, Inc.	Gainesville	FL			02	

APPL-NO: 08/638088 [PALM]

DATE FILED: April 26, 1996

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation-in-part